

Contribution to the taxonomy of the *Pseudepipona* subgenus *Deuterepipona* Blüthgen, 1951 (Hymenoptera, Vespidae, Eumeninae) from Central Asia, with the description of four new species

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Abstract

Four new species are described: *Pseudepipona* (*Deuterepipona*) *kostylevi* Fateryga, **sp. nov.** (Turkmenistan, Uzbekistan, Kazakhstan), *P. (D.) nikolayi* Fateryga, **sp. nov.** (Kazakhstan), *P. (D.) popovi* Fateryga, **sp. nov.** (Turkmenistan), and *P. (D.) vladimiri* Fateryga, **sp. nov.** (Kazakhstan). A new synonymy is proposed: *Pseudepipona* (*Deuterepipona*) *superba* (Morawitz, 1867) = *P. (D.) tricolor* Gusenleitner, 1976, **syn. nov.** Lectotypes are designated for two species: *Pseudepipona* (*Deuterepipona*) *herzi* (Morawitz, 1895) and *P. (D.) superba*. Two species, both not occurring in the region under study, are transferred to the subgenus *Deuterepipona* from the nominotypical one: *Pseudepipona* (*Deuterepipona*) *priesneri* Gusenleitner, 1970 and *P. (D.) pseudominuta* Gusenleitner, 1971. An identification key to all six species of the subgenus *Deuterepipona* from Central Asia is provided.

Keywords

Eumenine wasps, new synonymy, Palaearctic region, solitary wasps

Introduction

Pseudepipona de Saussure, 1856 is a genus of solitary wasps in the subfamily Eumeninae with 39 hitherto described species. Most of them occur in the Palaearctic region except two Afrotropical species; one species is also found in India and another one is present in both the Palaearctic and Nearctic region (Carpenter et al. 2010; Girish Kumar et al. 2017; Kim 2020; Bai et al. 2021; Fateryga 2022). The genus *Pseudepipona* includes two subgenera: *Deuterepipona* Blüthgen, 1951 and *Pseudepipona s. str.* Seven Palaearctic species were hitherto recognized in the subgenus *Deuterepipona* (Giordani Soika 1970; van der Vecht and Fischer 1972; Fateryga et al. 2017). The bionomics of the genus were recently summarized by Fateryga (2022); those of the subgenus *Deuterepipona* are unknown. Two species of the subgenus *Deuterepipona* have been reported from Central Asia: *Pseudepipona herzi* (Morawitz, 1895), distributed in Israel, Turkmenistan, Kyrgyzstan, Kazakhstan, Mongolia, and China (Kurzenko 1977; Oehlke 2012), and *P. tricolor* Gusenleitner, 1976, distributed in Russia, Iran, and Kazakhstan (Dvořák and Castro 2007; Gusenleitner 2013).

In this paper, four new species of *Pseudepipona* (*Deuterepipona*) are described from Central Asia and one species is synonymized; lectotypes of two species are designated. Two species, both not occurring in the region under study, are transferred to the subgenus *Deuterepipona* from the nominotypical one. As a result, 42 species of the genus *Pseudepipona* are currently recognized: 12 in *Deuterepipona* and 30 in *Pseudepipona s. str.*

Materials and methods

The material for the present study was mainly from the collection of the Federal Scientific Center of the East Asia Terrestrial Biodiversity of the Far Eastern Branch of the Russian Academy of Sciences, Vladivostok, Russia [FSCV]. Type material was also studied in the Zoological Institute of the Russian Academy of Sciences, Saint Petersburg, Russia [ZISP]. Some additional type specimens were examined by photos from the collections of the Naturalis Biodiversity Center, Leiden, The Netherlands, and the Stuttgart State Museum of Natural History, Stuttgart, Germany.

Photographs of the specimens were taken with a Canon EOS 550D digital camera and a Yongnuo YN-14EX macro flash attached to an Olympus SZ60 stereomicroscope. Multifocus images were created from stacks of photographs using CombineZP software. The final illustrations were postprocessed for sharpness, contrast, and brightness using Adobe Photoshop CS2 software. Male genitalia were extracted after re-softening the specimens and were then boiled in 10% NaOH for 5 min. After that, they were rinsed in 80% ethanol and only then stored and studied in glycerin.

Species delimitation is based on the external morphology and the structure of the male genitalia. No subspecies based on different coloration are recognized within species according to Carpenter (1987) and Fateryga et al. (2021).

In morphological descriptions, the letter “F” refers to antennal flagellomeres, the letter “T” to metasomal terga, and the letter “S” to metasomal sterna.

Taxonomy

Genus *Pseudepipona* de Saussure, 1856

Pseudepipona de Saussure, 1856: 309; type species: *Odynerus herrichii* de Saussure, 1856, by monotypy.

Leptepipona Blüthgen, 1951: 194; type species: *Vespa tripunctata* Fabricius, 1787, by original designation; synonymized by van der Vecht and Fischer 1972: 82–83.

Metepipona Blüthgen, 1951: 193; type species: *Odynerus peculiaris* Morawitz, 1895, by original designation; synonymized by van der Vecht and Fischer 1972: 82–83.

Trichepipona Blüthgen, 1951: 193; type species: *Odynerus lativentris* de Saussure, 1855, by original designation; synonymized by van der Vecht and Fischer 1972: 82–83.

Diagnosis. Female clypeus with a narrow apical margin; labial palpus with four segments; male antenna hooked apically; female vertex with a single fovea; anterior face of the pronotum without distinct foveae; pretegular carina present; tegula broad, without deep large punctures, protruding posteriorly adjoining the parategula but not surpassing it; second submarginal cell of the forewing with acute basal angle; axillary fossa relatively broad, not slit-like; propodeum with a transverse carina between the dorsal and posterior surfaces; propodeal valvula mono-lamellate; propodeal orifice broadly rounded dorsally; T1 not petiolate, somewhat narrower than T2, without a transverse carina; both T1 and T2 without an apical lamella.

Subgenera and species included. Twelve species are currently recognized in the subgenus *Deuterepipona* Blüthgen, 1951 and 30 species in the subgenus *Pseudepipona* s. str.

Subgenus *Deuterepipona* Blüthgen, 1951

Deuterepipona Blüthgen, 1951: 194. Type species: *Odynerus ionius* de Saussure, 1855, by original designation.

Diagnosis. Male mandible without a notch between the basal and preapical teeth; pronotal carina usually forming obtuse or rounded angle laterally.

Species included. *Pseudepipona ankarensis* Giordani Soika, 1970 (Turkey), *P. herzi* (Morawitz, 1895) (Israel, Turkmenistan, Kyrgyzstan, Kazakhstan, Mongolia, China), *P. inexpectata* (Blüthgen, 1955) (Italy), *P. ionia* (de Saussure, 1855) (Bulgaria, Greece, Turkey, Syria), *P. kostylevi* Fateryga, sp. nov. (Turkmenistan, Uzbekistan, Kazakhstan), *P. nikolayi* Fateryga, sp. nov. (Kazakhstan), *P. niveopicta* Giordani Soika, 1970 (Russia, Turkey), *P. popovi* Fateryga, sp. nov. (Turkmenistan), *P. priesneri* Gusenleitner, 1970 (Saudi Arabia, Iran), *P. pseudominuta* Gusenleitner, 1971 (Turkey, Israel), *P. superba* (Morawitz, 1867) (Russia, ?Azerbaijan, Iran, Kazakhstan), and *P. vladimiri* Fateryga, sp. nov. (Kazakhstan).

Remarks. *Pseudepipona priesneri* and *P. pseudominuta* are transferred to the subgenus *Deuterepipona* from the nominotypical one (see below).

Key to the species of the subgenus *Deuterepipona* from Central Asia

The male of *Pseudepipona nikolayi* sp. nov. not known.

- 1 Females.....2
- Males.....7
- 2 Epicnemial carina obsolete; transverse carina of propodeum indistinct at center; S2 without longitudinal furrow at base (Fig. 5D); clypeus dull, with small and sparse shallow punctures and microsculpture (Fig. 5C); cephalic fovea weakly developed; body black with orange pattern, wings strongly fuscous***P. nikolayi* Fateryga, sp. nov.**
- Epicnemial carina distinct; transverse carina of propodeum complete; S2 with at least weakly developed longitudinal furrow at base (see Fig. 7H); clypeus with larger and deeper punctures, sometimes with shining interstices (Figs 1D, 2B, D, F, 4C, 6C, 7D, 8C, 9C); cephalic fovea variable; coloration variable 3
- 3 Wings completely transparent; clypeus with coarse punctures and shining interstices, black (Fig. 4C); pronotal carina forming blunt angle laterally (Fig. 4A); cephalic fovea well developed; longitudinal furrow at base of S2 distinct; body black with whitish pattern***P. kostylevi* Fateryga, sp. nov.**
- Wings fuscous at least in marginal cell; clypeus with less coarse punctures, interstices often dull, with variable coloration (Figs 1D, 2B, D, F, 6C, 7D, 8C, 9C); pronotal carina either forming blunt angle (Figs 1A, 7A, 8A, 9A) or rounded laterally (Fig. 6A); cephalic fovea variable; longitudinal furrow at base of S2 variable; coloration variable 4
- 4 Pronotal carina rounded laterally (Fig. 6A); cephalic fovea nearly indistinct; clypeus with shining interstices, black or with light central spot in distal half (Fig. 6C); longitudinal furrow at base of S2 rather weakly developed; body black with pale yellow pattern.....***P. popovi* Fateryga, sp. nov.**
- Pronotal carina forming blunt angle laterally (Figs 1A, 7A, 8A, 9A); cephalic fovea at least weakly developed; clypeus with rather dull interstices, with various color from entirely black or reddish to entirely yellow or yellow with black central spot in distal half but not black with light central spot in distal half (Figs 1D, 2B, D, F, 7D, 8C, 9C); longitudinal furrow at base of S2 variable; coloration variable 5
- 5 Cephalic fovea weakly developed; longitudinal furrow at base of S2 weakly developed; basal part of flagellum (F1–F3) ferruginous dorsally; S2 completely yellow; S3–S6 with yellow apical bands or central spots; clypeus completely yellow (Fig. 9C) ***P. vladimiri* Fateryga, sp. nov.**
- Cephalic fovea well developed; longitudinal furrow at base of S2 distinct; entire flagellum black dorsally; S2 black with light apical band; S3–S6 mostly black or just S3 with lateral spots; clypeus with variable coloration (Figs 1D, 2B, D, F, 7D, 8C).....6

- 6 Body black with either yellow or orange-yellow pattern (Figs 1A, B, 2A, C, E); clypeus from black to yellow (Figs 1D, 2B, D, F) ***P. herzi* (Morawitz, 1895)**
- Body black with both whitish and reddish pattern (Figs 7A, B, 8A, B); clypeus from black to reddish (Figs 7D, 8C) ***P. superba* (Morawitz, 1867)**
- 7 Wings completely transparent; clypeus with very shallow apical emargination (Fig. 4F); F11 small, hardly reaching apical margin of F8 (Fig. 4G); median expansion of aedeagus comparatively narrow (Fig. 3B); ventral lobe of aedeagus in lateral view saddle-shaped, with distinctly emarginated ventral side (Fig. 3G); pronotal carina forming blunt angle laterally (Fig. 4E); body black with whitish and whitish-yellow pattern..... ***P. kostylevi* Fateryga, sp. nov.**
- Wings fuscous at least in marginal cell; clypeus with more deeply emarginated apical margin (Figs 1E, 6E, 7E, 9F); F11 larger, fully reaching apical margin or even middle of F8 (Figs 1H, 6H, 7I, 9G); median expansion of aedeagus variable (Fig. 3A, C–E); ventral lobe of aedeagus in lateral view variable, with not emarginated or just very slightly emarginated ventral side (Fig. 3F, H–J); pronotal carina either forming blunt angle (Figs 1F, 7F, 9E) or rounded laterally (Fig. 6F); coloration variable..... **8**
- 8 Pronotal carina rounded laterally (Fig. 6F); clypeus with shining interstices (Fig. 6E); F11 robust (Fig. 6H); median expansion of aedeagus broad (Fig. 3C); ventral lobe of aedeagus in lateral view rather triangle-shaped, gradually narrowing towards apex (Fig. 3H); body black with pale yellow pattern..... ***P. popovi* Fateryga, sp. nov.**
- Pronotal carina forming blunt angle laterally (Figs 1F, 7F, 9E); clypeus with rather dull interstices (Figs 1E, 7E, 9F); F11 variable but less robust (Figs 1H, 7I, 9G); median expansion of aedeagus variable (Fig. 3A, D, E); ventral lobe of aedeagus in lateral view rather trapezoidal (Fig. 3F, I, G); coloration variable..... **9**
- 9 F11 very slender (Fig. 9G); clypeus with acute apical teeth (Fig. 9F); median expansion of aedeagus broad (Fig. 3E); ventral lobe of aedeagus small (Fig. 3J); basal part of flagellum (F1–F2) ferruginous dorsally; S2 nearly completely yellow; S3–S6 with yellow apical bands.... ***P. vladimiri* Fateryga, sp. nov.**
- F11 less slender (Figs 1H, 7I); clypeus with rather blunt apical teeth (Figs 1E, 7E); median expansion of aedeagus comparatively narrow (Fig. 3A, D); ventral lobe of aedeagus much larger (Fig. 3F, I); entire flagellum black dorsally; S2 black with light apical band; S3–S6 mostly black or just S3 with lateral spots **10**
- 10 Body black with either yellow or orange-yellow pattern (Fig. 1F, G) ***P. herzi* (Morawitz, 1895)**
- Body black with both whitish and reddish pattern (Fig. 7F, G) ***P. superba* (Morawitz, 1867)**

***Pseudepipona herzi* (Morawitz, 1895)**

Figs 1A–H, 2A–F, 3A, F

Odynerus herzi Morawitz, 1895: 471–473, ♀ ♂; type locality “Transcaspia: Sumbar” [Turkmenistan].

Pseudepipona herzi herzi: van der Vecht & Fischer, 1972: 87.

? *Odynerus kozlovi* Kostylev, 1937: 222, ♀ ♂; type locality: in Russian “Уургин-худук” [Uurgin-khuduk] and in French “Mongolie, Alachan” [China: Inner Mongolia].

Pseudepipona herzi kozlovi: van der Vecht & Fischer, 1972: 87.

? *Deuterepipona herzi enslini* Blüthgen, 1955: 28–29, ♂; type locality: “Jericho” [Israel].

Pseudepipona herzi enslini: van der Vecht & Fischer, 1972: 86.

Lectotype (designated here). TURKMENISTAN: “Sumbar”, 1 ♀, leg. O. Herz [ZISP] (Fig. 1A–D).

Paralectotype. TURKMENISTAN: “Sumbar”, 1 ♂, leg. O. Herz [ZISP] (Fig. 1E–H).

Distribution. Israel, Turkmenistan, Kyrgyzstan, Kazakhstan, Mongolia, China (van der Vecht and Fischer 1972; Kurzenko 1977; Oehlke 2012).

Remarks. This species is very variable in coloration. Females from Southern Kazakhstan (Fig. 2A, B) differ from the typical form (Fig. 1A, B, D) by the absence of the spot on the dorsal mesepisternum and a completely black clypeus while females from Southeastern Kazakhstan (Fig. 2C, D) differ from the typical form by a completely yellow clypeus. Females from Eastern Kazakhstan (*P. herzi kozlovi*, Fig. 2E, F) differ from all other forms by an orange-yellow pattern instead of a pure yellow. No differences were found in the male genitalia between specimens from Turkmenistan and Southern Kazakhstan while males of the form from Eastern Kazakhstan were not examined, nor were males of *P. herzi enslini*. Both subspecies are probably conspecific with *P. herzi* but need further study.

***Pseudepipona kostylevi* Fateryga, sp. nov.**

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Figs 3B, G, 4A–H

Holotype. TURKMENISTAN: “Туркмения, Ахчакуйма, NW Казанджика” [Akhcha-Kuyma, NW Gazandjyk (currently Bereket)], 3.VI.1976, 1 ♀, leg. N.V. Kurzenko [FSCV] (Fig. 4A–D).

Paratypes. TURKMENISTAN: “Туркмения, Ахчакуйма, NW Казанджика” [Akhcha-Kuyma, NW Gazandjyk (currently Bereket)], 2.VI.1976, 1 ♀, leg. N.V. Kurzenko [FSCV]; *ibid.*, 3.VI.1976, 1 ♀, leg. N.V. Kurzenko [ZISP]; “Туркмения, Ахча-Куйма, 30 км СЗ Казанджика” [Akhcha-Kuyma, 30 km NW Gazandjyk (currently Bereket)], 1.VI.1985, 1 ♀ (specimen without metasoma), leg. A.S. Lelej [FSCV]. UZBEKISTAN: “Узбекистан, окр. Бухары” [vicinity of Bukhara], 25.V.1972, 3 ♀ (one specimen without left wings), leg. V.L. Kazenas [FSCV]; “Узбекистан, 53 км зап. Бухары” [53

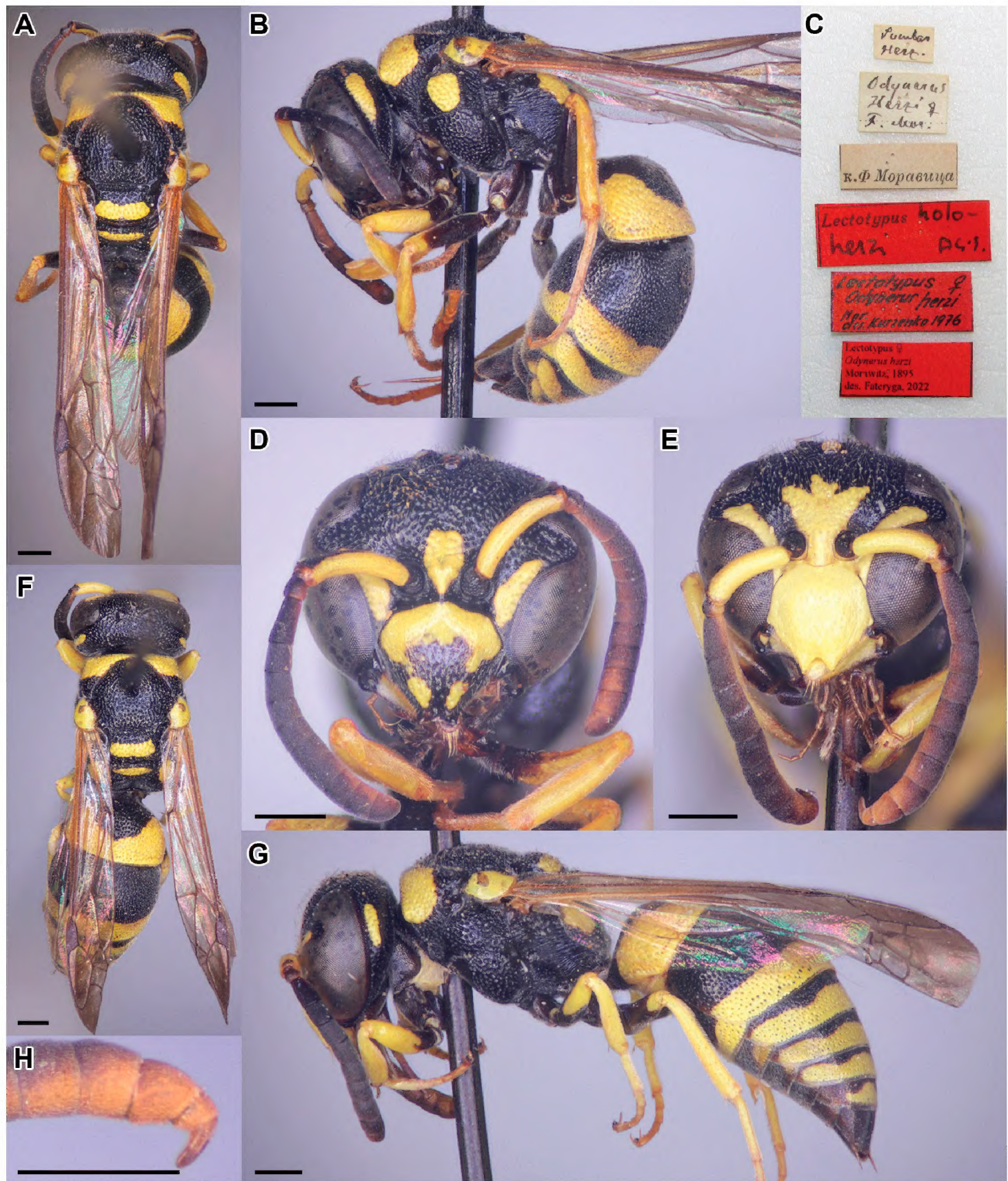


Figure 1. *Pseudepipona herzi* (Morawitz, 1895) **A–D** ♀, lectotype (Turkmenistan) **E–H** ♂, paralectotype (Turkmenistan) **A, F** habitus in dorsal view **B, G** habitus in lateral view **C** labels **D, E** head in frontal view **H** apex of antenna. Scale bars 0.5 mm.

km W Bukhara], 22.V.1973, 1 ♀, leg. V.L. Kazenas [FSCV]. KAZAKHSTAN: Kyzylorda Province: “Казахстан, 10 км ЮЗ Чардары” [10 km SW Shardara], 19.V.1979, 1 ♀ (specimen without metasoma), leg. V.L. Kazenas [FSCV]; “120 км N Кзыл-Орды. оз. Карамолла” [120 km N Kyzylorda, Kara-Molla Lake], 23.V.1973, 2 ♂ (one specimen without metasoma), leg. N.V. Kurzenko [FSCV] (Fig. 4E–H).



Figure 2. Females of *Pseudepipona herzi* (Morawitz, 1895) **A, B** Kazakhstan (Turkestan Province) **C, D** Kazakhstan (Almaty Province) **E, F** Kazakhstan (Pavlodar Province) **A, C, E** habitus in lateral view **B, D, F** head in frontal view. Scale bars: 0.5 mm.

Diagnosis. The new species can be easily recognized among other representatives of the subgenus *Deuterepipona* by completely transparent wings, coarse punctures on clypeus, a shallow apical emargination of the clypeus in the male, a small F11 in the male, a saddle-shaped ventral lobe of the male aedeagus, and a whitish pattern (see Key).

Description. Female. Body length (from head to apical margin of tergum 2) 6.5–7.0 mm; fore wing length 6.0 mm.

Head about $1.1\times$ as wide as long in frontal view. Clypeus as wide as long; its apical emargination very shallow, about $0.2\times$ as deep as wide, taking $1/4$ of clypeal width, apical teeth blunt. Cephalic fovea shallow but well developed, as broad as

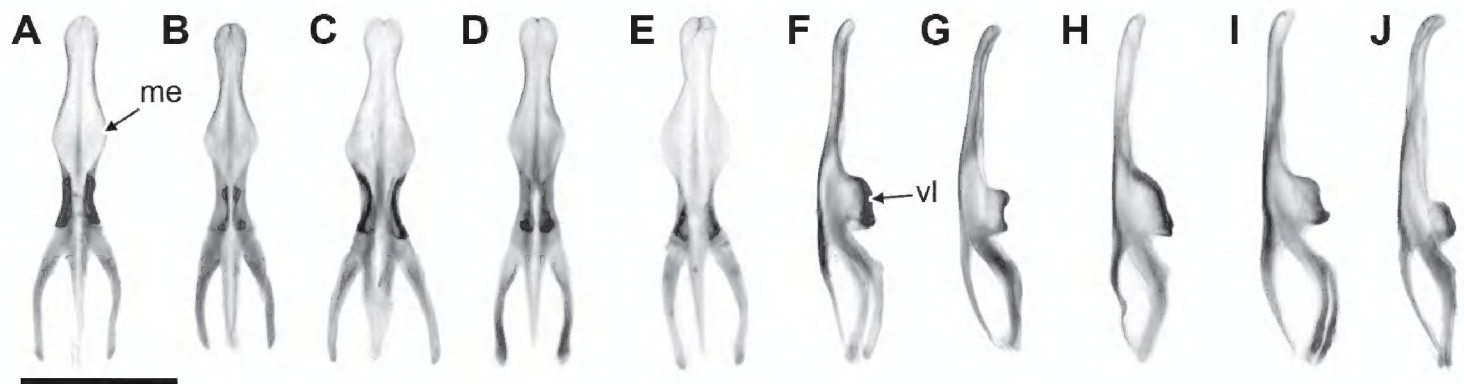


Figure 3. Aedeagi of *Pseudepipona* spp. **A, F** *P. herzi* (Morawitz, 1895) **B, G** *P. kostylevi* Fateryga, sp. nov. **C, H** *P. popovi* Fateryga, sp. nov. **D, I** *P. superba* (Morawitz, 1867) **E, J** *P. vladimiri* Fateryga, sp. nov. **A–E** dorsal view (**me** = median expansion) **F–J** lateral view (**vl** = ventral lobe). Scale bar 0.5 mm.

distance between lateral ocelli; distance between lateral ocellus and occiput $1.1\times$ as distance between lateral ocelli. Pronotal carina well developed, forming blunt angle at anterolateral corner of pronotum. Epicnemial carina developed. Scutellum and metanotum convex. Propodeum with distinct carina between shelf and concavity, carina forming rectangularly rounded projection in lateral view. Propodeal valvula mono-lamellate, evenly rounded. T1 $1.8\times$ as wide as long in dorsal view, bluntly roundly angled in lateral view. T2 evenly convex in lateral view. S2 in lateral view rather flattened, roundly elevated at base, in ventral view with distinct longitudinal furrow at base.

Clypeus with coarse dense punctures, interstices approximately equal to puncture diameter, shining. Frons and vertex with punctures coarser than those on clypeus, interstices usually less than puncture diameter; punctures on gena slightly smaller and sparser. Pronotum dorsally with punctures similar to those on vertex; lateral part of pronotum with denser and smaller punctures and dull interstices with distinct microsculpture. Sculpture on scutum coarser than that on dorsal surface of pronotum, interstices usually less than puncture diameter. Tegula nearly smooth, with few minute punctures. Punctures on mesepisternum, scutellum, and metanotum similar in size to those on dorsal surface of pronotum, interstices usually approximately equal to puncture diameter except whitish parts where they exceed puncture diameter. Mesepimeron with coarse punctures forming longitudinal rows. Metapleuron dull, weakly longitudinally rugose. Dorsal and dorsolateral surfaces of propodeum with shallow irregular, indistinct but coarse punctures similar in size to those on metanotum. Lateral surface of propodeum longitudinally rugose, more distinctly than metapleuron, without punctures. Propodeal concavity transversally rugose. T1 and T2 with dense coarse punctures similar to those on frons and vertex, interstices usually less than puncture diameter except apical bands where punctures are smaller. T3–T5 with sparser and smaller punctures. T6 mostly with microsculpture only. Sculpture of S1 similar to that of lateral part of T1. Basal part of S2 before transverse furrow dull, with microsculpture only. Sculpture of distal part of S2 after transverse furrow and S3–S6 as that of corresponding terga but interstices larger and microsculpture more distinct.



Figure 4. *Pseudepipona kostylevi* Fateryga, sp. nov. **A–D** ♀, holotype (Turkmenistan) **E–H** ♂, paratype (Kazakhstan: Kyzylorda Province) **A, E** habitus in dorsal view **B, H** habitus in lateral view **C, F** head in frontal view **D** labels **G** apex of antenna. Scale bars: 0.5 mm.

Setation weakly developed. Frons, vertex, dorsal surface of pronotum, scutum, and tarsi with sparse setae less in length than diameter of scapus at base. Posterior margin of gena with very short setae equal in length to puncture diameter on gena. Most other parts of body bare or with very minute setae.

Basal color black. The following parts whitish: spot on frons between antennal sockets, anterior and lower faces of scapus, small band along inner margin of eye from clypeus to ocular sinus, small spot on gena, large lateral spots on dorsal surface of pronotum, spot on dorsal mesepisternum, tegula and parategula, bands on scutellum and metanotum, lateral spots on propodeum, front leg from middle of femur onwards, middle leg from apex of femur onwards, hind leg from tibia onwards, apical bands on T1 and T2 enlarged laterally, apical bands on T3–T4, spot on T6, apical band on S2, apical spots laterally on S3. Ventral side of flagellum ferruginous. Wings transparent, without infuscation.

Male. Body length (from head to apical margin of T2) 5.5 mm; fore wing length 5.0 mm.

Structure as in female but clypeus with apical emargination taking about 1/3 of clypeal width. F11 rather acute, straight, and small, narrowing towards apex, hardly reaching apical margin of F8. Cuspis without the dorsal process typical of some species in the nominotypical subgenus (see Fateryga 2022). Aedeagus as in Fig. 3B, G, median expansion comparatively narrow, ventral lobe in lateral view saddle-shaped, with distinctly emarginated ventral side.

Sculpture similar to that in female but punctures on clypeus shallower. T6 and S6 punctate similarly to previous segments. T7 and S7+8 mostly with microsculpture only.

Setae as in female.

Coloration mostly as in female but mandible, labrum, and clypeus whitish-yellow, spot on frons and band along inner margin of eye larger, entire scapus and ventral side of pedicel whitish-yellow, all legs whitish-yellow from femur; whitish spots on dorsal mesepisternum and propodeum reduced. Entire F10 and F11 ferruginous. T7 and S7+8 black.

Etymology. The new species is named after the Soviet entomologist Georg Kostylev, also known as Yuriy A. Kostylev (1889–1942), in recognition of his great contribution to the systematics of Central Asian Vespidae.

Distribution. Turkmenistan, Uzbekistan, Kazakhstan (Kyzylorda Province).

***Pseudepipona nikolayi* Fateryga, sp. nov.**

<https://zoobank.org/2803327D-95C6-49E7-A085-70A87A422D97>

Fig. 5A–E

Holotype. KAZAKHSTAN. Karaganda Province: “Бетпак-Дала, ср. теч. р. Сары-Су” [Betpak-Dala, middle reaches of Sary-Su River], 19.V.1973, 1 ♀, leg. N.V. Kurzenko [FSCV] (Fig. 5A–E).

Diagnosis. The new species can be easily recognized among other representatives of the subgenus *Deuterepipona* by an obsolete epicnemial carina, the transverse carina of the propodeum indistinct at center, the absence of a longitudinal furrow at the base of S2, a fine punctation of the clypeus with a distinct microsculpture, and an orange pattern (see Key).

Description. Female. Body length (from head to apical margin of tergum 2) 6.0 mm; fore wing length 5.5 mm.



Figure 5. *Pseudepipona nikolayi* Fateryga, sp. nov., ♀, holotype **A** habitus in dorsal view **B** habitus in lateral view **C** head in frontal view **D** metasoma in ventral view **E** labels. Scale bars 0.5 mm.

Head about $1.1\times$ as wide as long in frontal view. Clypeus about $1.1\times$ as wide as long in frontal view, its apical margin nearly truncated, taking nearly $1/3$ of clypeal width, apical teeth blunt. Cephalic fovea shallow and weakly developed, less broad than distance between lateral ocelli; distance between lateral ocellus and occiput nearly $1.3\times$ as distance between lateral ocelli. Pronotal carina forming small blunt angle at anterolateral corner of pronotum. Epicnemial carina obsolete. Scutellum and metanotum convex. Propodeum with carina between shelf and concavity indistinct at center; laterally this carina forming acute projection. Propodeal valvula mono-lamellate, rounded apically. T1 $2.0\times$ as wide as long in dorsal view, rather evenly rounded in lateral view. T2 evenly convex in lateral view. S2 in lateral view convex, evenly rounded, in ventral view without longitudinal furrow at base.

Clypeus dull, with small and sparse shallow punctures, interstices significantly exceeding puncture diameter, with microsculpture. Frons and vertex with deep dense punctures, interstices reaching puncture diameter; punctures on gena slightly smaller and sparser. Pronotum dorsally with punctures similar to those on gena; lateral part of pronotum with sparse shallow punctures and dull interstices with distinct microsculpture. Sculpture on scutum coarser than that on dorsal surface of pronotum, similar to that on frons and vertex or somewhat sparser, interstices with evident micropunctures. Tegula nearly smooth, with few minute punctures. Dorsal mesepisternum dull, sparsely punctate and longitudinally rugose. Ventral mesepisternum, scutellum, and metanotum with sparse punctures; interstices shining, reaching several puncture diameters.

Mesepimeron, metapleuron, and lateral surface of propodeum longitudinally rugose, dull. Dorsal and dorsolateral surfaces of propodeum and propodeal concavity dull, indistinctly transversally rugose. T1–T5 with sparse small punctures similar to those on clypeus but much deeper, interstices reaching several puncture diameters, with distinct microsculpture. T6 mostly with microsculpture only. S1 with dense coarse punctures, interstices less than puncture diameter. Basal part of S2 before transverse furrow dull, with microsculpture only. Sculpture of distal part of S2 after transverse furrow and S3–S6 mostly as that of corresponding terga.

Frons and vertex with somewhat hooked or wavy setae reaching in length diameter of scapus at apex. Dorsal surface of pronotum, propleuron, and legs with shorter and mostly straight setae. Posterior margin of gena with very short setae reaching in length diameter of first labial palpomere at base. Most other parts of body bare or with very minute setae.

Basal color black. The following parts orange: clypeus, spot on frons between antennal sockets, anterior and lower faces of scapus, small spot on gena, most part of pronotum, spot on dorsal mesepisternum, tegula and parategula, bands on scutellum and metanotum, small lateral spots on propodeum, legs from middle of femur onwards, apical bands on T1 and T2 enlarged laterally, apical band on T3, apical spot at center of T4 and T5, apical spots laterally on S2. Mandible and ventral side of pedicel and flagellum ferruginous. Wings strongly fuscous.

Male. Unknown.

Etymology. The new species is named after the Soviet and Russian entomologist Nikolay V. Kurzenko, the collector of the holotype, in recognition of his great contribution to the systematics of the eumenine wasps of the USSR; this species was recognized by him but not described.

Distribution. Kazakhstan (Karaganda Province).

***Pseudepipona popovi* Fateryga, sp. nov.**

<https://zoobank.org/D09BFAEA-ED17-4605-850F-BD0B0E30248D>

Figs 3C, H, 6A–H

Holotype. TURKMENISTAN: “Туркмения, Бадхызский запов. Кызыл-жар” [Badhyz Nature Reserve, Kyzyl-Zhar], 16.V.1976, 1 ♀, leg. N.V. Kurzenko [FSCV] (Fig. 6A–D).

Paratypes. TURKMENISTAN: “Туркмения, Бадхызский запов. Кызыл-жар” [Badhyz Nature Reserve, Kyzyl-Zhar], 16.V.1976, 1 ♂, leg. N.V. Kurzenko [FSCV] (Fig. 6E–H); *ibid.*, 17.V.1976, 2 ♀, leg. N.V. Kurzenko [FSCV, ZISP].

Diagnosis. The new species can be easily recognized among other representatives of the subgenus *Deuterepipona* by the pronotal carina rounded laterally, a nearly indistinct cephalic fovea in the female, a robust F11 in the male, and a triangle-shaped ventral lobe of the male aedeagus (see Key).

Description. Female. Body length (from head to apical margin of tergum 2) 6.0–7.0 mm; fore wing length 5.5–6.0 mm.

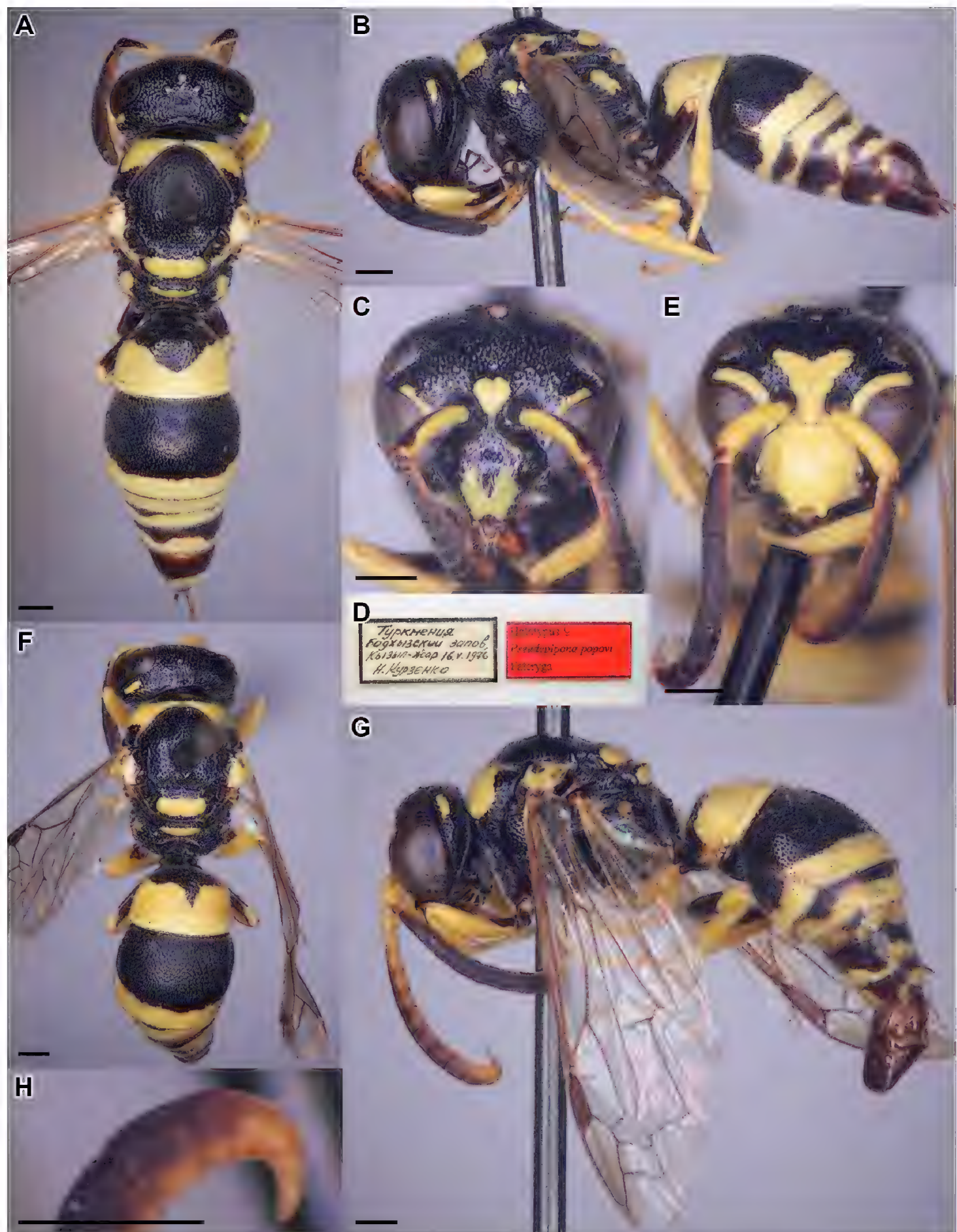


Figure 6. *Pseudepipona popovi* Fateryga, sp. nov. **A–D** ♀, holotype **E–H** ♂, paratype **A, F** habitus in dorsal view **B, G** habitus in lateral view **C, E** head in frontal view **D** labels **H** apex of antenna. Scale bars: 0.5 mm.

Head about 1.1× as wide as long in frontal view. Clypeus as wide as long; its apical emargination shallow, about 0.2× as deep as wide, taking 1/4 of clypeal width, apical teeth blunt. Cephalic fovea nearly indistinct; distance between lateral ocellus

and occiput $1.2\times$ as distance between lateral ocelli. Pronotal carina weakly developed, pronotum rounded at anterolateral corner. Epicnemial carina developed. Scutellum convex, slightly impressed at center; metanotum convex. Propodeum with distinct carina between shelf and concavity, carina forming rectangularly rounded projection in lateral view. Propodeal valvula mono-lamellate, evenly rounded. T1 $2.0\times$ as wide as long in dorsal view, bluntly roundly angled in lateral view. T2 evenly convex in lateral view. S2 in lateral view rather flattened, roundly elevated at base, in ventral view with weakly developed longitudinal furrow at base.

Clypeus with sparse fine punctures, interstices exceeding puncture diameter, shining. Frons and vertex with punctures much denser and coarser than those on clypeus, interstices reaching puncture diameter; punctures on gena slightly smaller and sparser. Pronotum dorsally with punctures similar to those on gena; lateral part of pronotum rather longitudinally wrinkled, with interstices dull due to microsculpture. Sculpture on scutum coarser than that on frons and vertex, interstices reaching puncture diameter; punctures sometimes form longitudinal rows, especially posteriorly. Tegula nearly smooth, with few minute punctures. Punctures on mesepisternum similar in size and density to those on scutum. Punctures on scutellum similar in size to those on dorsal surface of pronotum but interstices larger, reach several puncture diameters, shining; metanotum with similar punctures in proximal half and nearly smooth distally. Mesepimeron with coarse punctures similar in size to those on mesepisternum but interstices narrower, sharp. Metapleuron longitudinally rugose, with microsculpture but slightly shining. Dorsal and dorsolateral surfaces of propodeum with shallow irregular, indistinct but coarse punctures. Lateral surface of propodeum longitudinally rugose, dull. Propodeal concavity transversally rugose. T1 and T2 with deep sparse punctures, larger on black parts and smaller on pale yellow parts, interstices reaching several puncture diameter, with distinct microsculpture. T3–T5 with somewhat sparser and smaller punctures. T6 mostly with microsculpture only. Sculpture of S1 similar to that of lateral part of T1. Basal part of S2 before transverse furrow dull, with microsculpture only. Sculpture of distal part of S2 after transverse furrow similar to that of T2 but interstices larger and more shining. Sculpture of S3–S6 as that of corresponding terga but interstices larger and microsculpture more distinct.

Frons and vertex with sparse pale setae equal in length to diameter of scapus at apex. Mesosoma dorsally with setae equal in length to approximately $2/3$ of those on frons. Posterior margin of gena, tarsi, S1 and S2 with setae approximately two times shorter than those on dorsal mesosoma. Most other parts of body bare or with very short appressed setae.

Basal color black. The following parts pale yellow: distal part of clypeus (but clypeus entirely black in one specimen), spot on frons between antennal sockets, anterior and lower faces of scapus, small band along inner margins of eye from clypeus to ocular sinus, small spot on gena, most part of dorsal surface of pronotum, spot on dorsal mesepisternum, tegula and sometimes parategula (black in two specimens), bands on scutellum and metanotum, spot on dorsolateral surface of propodeum, front leg from middle of femur onwards, middle leg from apex of femur onwards, hind leg from tibia

onwards, apical band on T1 enlarged laterally, apical bands on T2–T4, spot on T6, apical bands on S1–S4, apical spot on S5. Ventral side of pedicel and flagellum ferruginous. Wings slightly but evidently fuscous, particularly in marginal cell.

Male. Body length (from head to apical margin of T2) 6.0 mm; fore wing length 5.5 mm.

Structure as in female but clypeus 1.2× as wide as long, with apical emargination 0.3× as deep as wide, taking distinctly more than 1/4 of clypeal width. F11 robust, slightly curved, and rather long, slightly narrowing towards apex, fully reaching apical margin of F8. Cuspis without the dorsal process typical of some species in the nominotypical subgenus (see Fateryga 2022). Aedeagus as in Fig. 6C, H, median expansion broad, ventral lobe in lateral view triangle-shaped, gradually narrowing towards apex.

Sculpture similar to that in female but punctures on clypeus finer and sparser. T6 and S6 punctate similarly to previous segments. T7 and S7+8 mostly with microsculpture only.

Setae as in female.

Coloration mostly as in female but mandible, labrum, clypeus, entire scapus and ventral side of pedicel pale yellow, spot on frons and band along inner margin of eye larger, all legs pale yellow from femur; spots on dorsal mesepisternum and propodeum reduced. Entire F10 and F11 ferruginous. T7 with pale yellow spot, S7+8 black.

Etymology. The new species is named after the Soviet entomologist Vladimir B. Popov (1902–1960), a corresponding member of the Academy of Sciences of the USSR, in recognition of his great contribution to the knowledge of Central Asian Hymenoptera.

Distribution. Turkmenistan.

Pseudepipona superba (Morawitz, 1867)

Figs 3D, I, 7A–I, 8A–D

Odynerus superbus Morawitz, 1867: 121–122, ♀ ♂; type locality: “Gouvernement von Saratow” [Russia].

Odynerus hyalinipennis André, 1884: 745–746, ♀; type locality: “Sarepta” [Russia: Volgograd Province]; synonymized by Blüthgen, 1942: 65.

Pseudepipona superba: Blüthgen, 1942: 65.

Pseudepipona tricolor Gusenleitner, 1976: 115–116, ♀ ♂; type locality: “Daghestan, Cmapomepera” [Russia: Dagestan; “Cmapomepera” is a misread word “Staroterchnoye” actually written in Cyrillic as “Старотеречное”], syn. nov.

Lectotype (designated here). RUSSIA. Volgograd Province: “Sarepta”, 1 ♀ [ZISP] (Fig. 7A–D).

Distribution. Russia, ?Azerbaijan, Iran, Kazakhstan (Dvořák and Castro 2007; Gusenleitner 2013; Fateryga et al. 2017).

Remarks. Examination of the photos of the holotype (Fig. 8A–D) and the paratype of *P. tricolor* from the Naturalis Biodiversity Center in Leiden revealed no significant



Figure 7. *Pseudepipona superba* (Morawitz, 1867) **A–D** ♀, lectotype (Russia: Volgograd Province) **E–G, I** ♂ (Russia: Crimea) **H** ♀ (Russia: Volgograd Province) **A, F** habitus in dorsal view **B, G** habitus in lateral view **C** labels **D, E** head in frontal view **H** metasoma in ventral view (**lf** = longitudinal furrow) **I** apex of antenna. Scale bars: 0.5 mm.

differences between this species and *P. superba* besides the coloration. Although the lectotype of *P. superba* has a reddish clypeus (Fig. 7D), the clypeus of all other specimens examined (including the ones from the type locality) is either entirely black or with

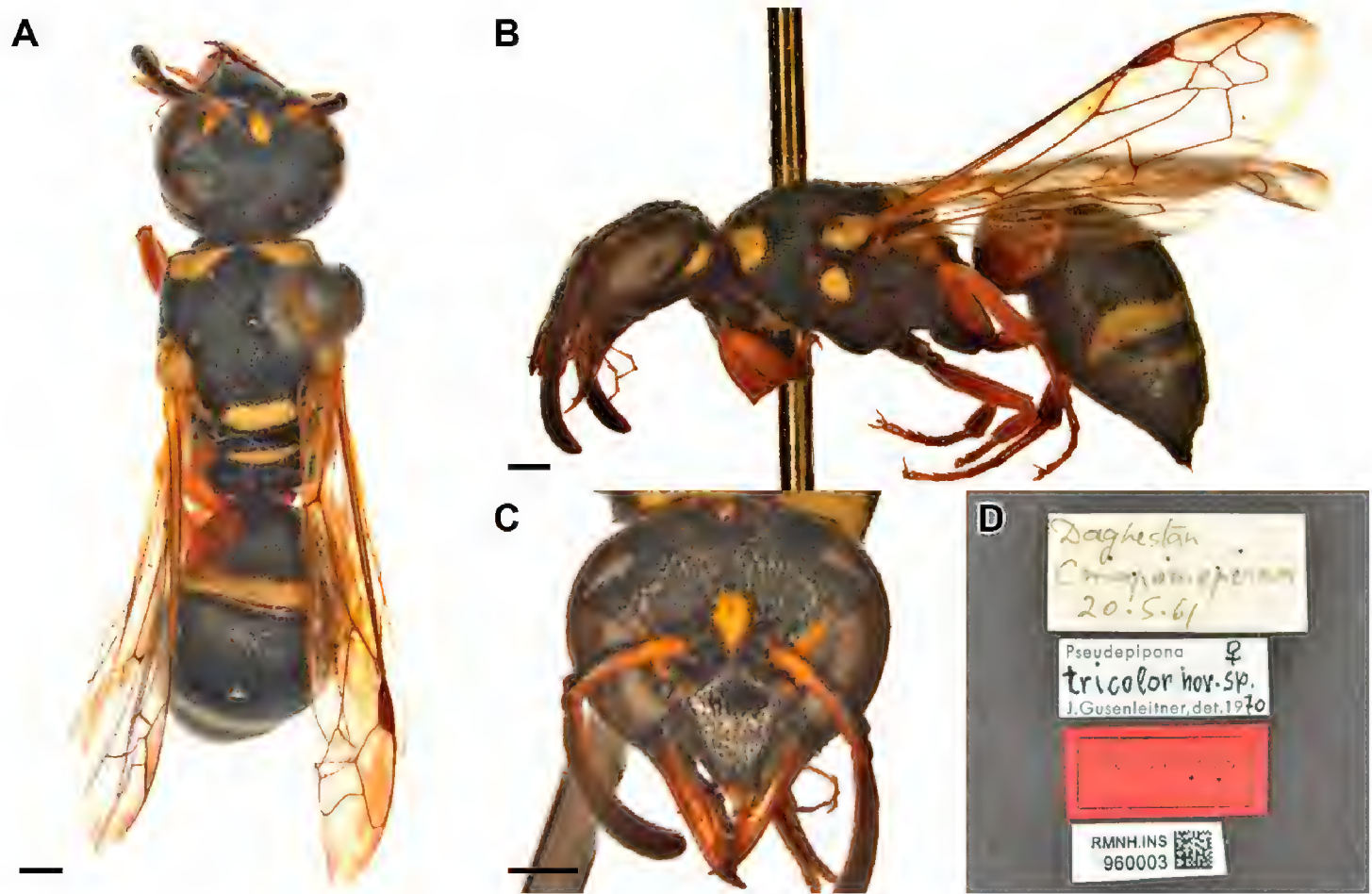


Figure 8. *Pseudepipona superba* (Morawitz, 1867), ♀, holotype of *P. tricolor* Gusenleitner, 1976 (Russia: Dagestan) **A** habitus in dorsal view **B** habitus in lateral view **C** head in frontal view **D** labels. Scale bars 0.5 mm. Photos by Frederique Bakker.

basal reddish spots laterally as corresponds to *P. tricolor*. *Pseudepipona superba* is closely related to *P. herzi* and these two species are distributed allopatrically. The differences between them are mainly in the coloration.

***Pseudepipona vladimiri* Fateryga, sp. nov.**

<https://zoobank.org/C50B9D36-D1BB-4DD3-A79E-FB0CB3D8081D>

Figs 3E, J, 9A–H

Holotype. KAZAKHSTAN. Karaganda Province: “Казахстан, окр. г. Балхаш” [vicinity of Balkhash], 2.VI.1974, 1 ♀, leg. V.L. Kazenas [FSCV] (Fig. 9A–D).

Paratypes. KAZAKHSTAN. Karaganda Province: “Казахстан, окр. г. Балхаш” [vicinity of Balkhash], 2.VI.1974, 5 ♂, leg. V.L. Kazenas [4 ♂ FSCV, 1 ♂ ZISP] (Fig. 9E–H).

Diagnosis. The new species can be easily recognized among other representatives of the subgenus *Deuterepipona* by the ferruginous coloration of the basal part of the flagellum dorsally, a very extensive yellow pattern of the body, acute apical teeth of the clypeus in the male, a long and slender F11 in the male, and a small ventral lobe of the male aedeagus (see Key).

Description. Female. Body length (from head to apical margin of tergum 2) 6.0 mm; fore wing length 5.5 mm.

Head about $1.1\times$ as wide as long in frontal view. Clypeus as wide as long; its apical emargination shallow, about $0.2\times$ as deep as wide, taking somewhat less than $1/4$ of clypeal width, apical teeth rather rectangular. Cephalic fovea shallow and weakly developed, as broad as distance between lateral ocelli; distance between lateral ocellus and occiput $1.4\times$ as distance between lateral ocelli. Pronotal carina well developed, forming blunt angle at anterolateral corner of pronotum. Epicnemial carina developed. Scutellum and metanotum convex. Propodeum with distinct carina between shelf and concavity, carina forming rectangularly rounded projection in lateral view. Propodeal valvula mono-lamellate, rounded apically. T1 $1.5\times$ as wide as long in dorsal view, bluntly roundly angled in lateral view. T2 evenly convex in lateral view. S2 in lateral view rather flattened, slightly roundly elevated at base, in ventral view with weakly developed longitudinal furrow at base.

Clypeus with sparse punctures sometimes forming longitudinal rows, interstices exceeding puncture diameter, rather dull. Frons and vertex with punctures coarser than those on clypeus, interstices reaching puncture diameter; punctures on gena slightly smaller and sparser. Pronotum dorsally with punctures similar to those on frons and vertex; lateral part of pronotum with dense indistinct sculpture, dull. Sculpture on scutum coarser than that on dorsal surface of pronotum, interstices usually less than puncture diameter. Tegula nearly smooth, with few minute punctures. Punctures on dorsal mesepisternum, scutellum, and metanotum similar in size to those on dorsal surface of pronotum, interstices usually approximately equal to puncture diameter. Ventral mesepisternum punctate rather similarly to scutum. Mesepimeron with coarse punctures forming longitudinal rows. Metapleuron and lateral portion of propodeum dull, longitudinally rugose. Dorsal and dorsolateral surfaces of propodeum with shallow irregular and coarse reticulate sculpture, interstices much less than puncture diameter. Propodeal concavity transversally rugose. T1 and T2 with dense coarse punctures, interstices reaching puncture diameter, with distinct microsculpture; punctures become smaller and sparser towards apical parts of terga. T3–T5 with sparser and smaller punctures. T6 mostly with microsculpture only. S1 with shallow irregular and coarse reticulate sculpture. Basal part of S2 before transverse furrow dull, with microsculpture only. Sculpture of distal part of S2 after transverse furrow and S3–S6 as that of corresponding terga.

Setation weakly developed. Frons and posterior margin of gena with sparse setae reaching in length $1/2$ diameter of scapus at base. Most other parts of body bare or with very minute setae.

Black with extensive yellow pattern: clypeus, large spot on frons, entire scapus, band along inner margin of eye from clypeus to ocular sinus, large spot on gena, nearly entire pronotum, large spot on dorsal mesepisternum, spot on ventral mesepisternum, tegula and parategula, nearly entire scutellum and metanotum, lateral spots on propodeum, all legs, nearly entire T1–T6 except basal black areas, entire S1 and S2, nearly entire S3–S6 except basal black areas. Mandible, labrum, ventral side of flagellum, entire pedicel, and entire F1–F3 ferruginous. Wings fuscous, particularly in marginal cell.

Male. Body length (from head to apical margin of T2) 5.0–6.0 mm; fore wing length 5.0–5.5 mm.

Structure as in female but clypeus with apical emargination $0.5\times$ as deep as wide, taking more than $1/4$ of clypeal width, apical teeth acute. F11 very slender, slightly

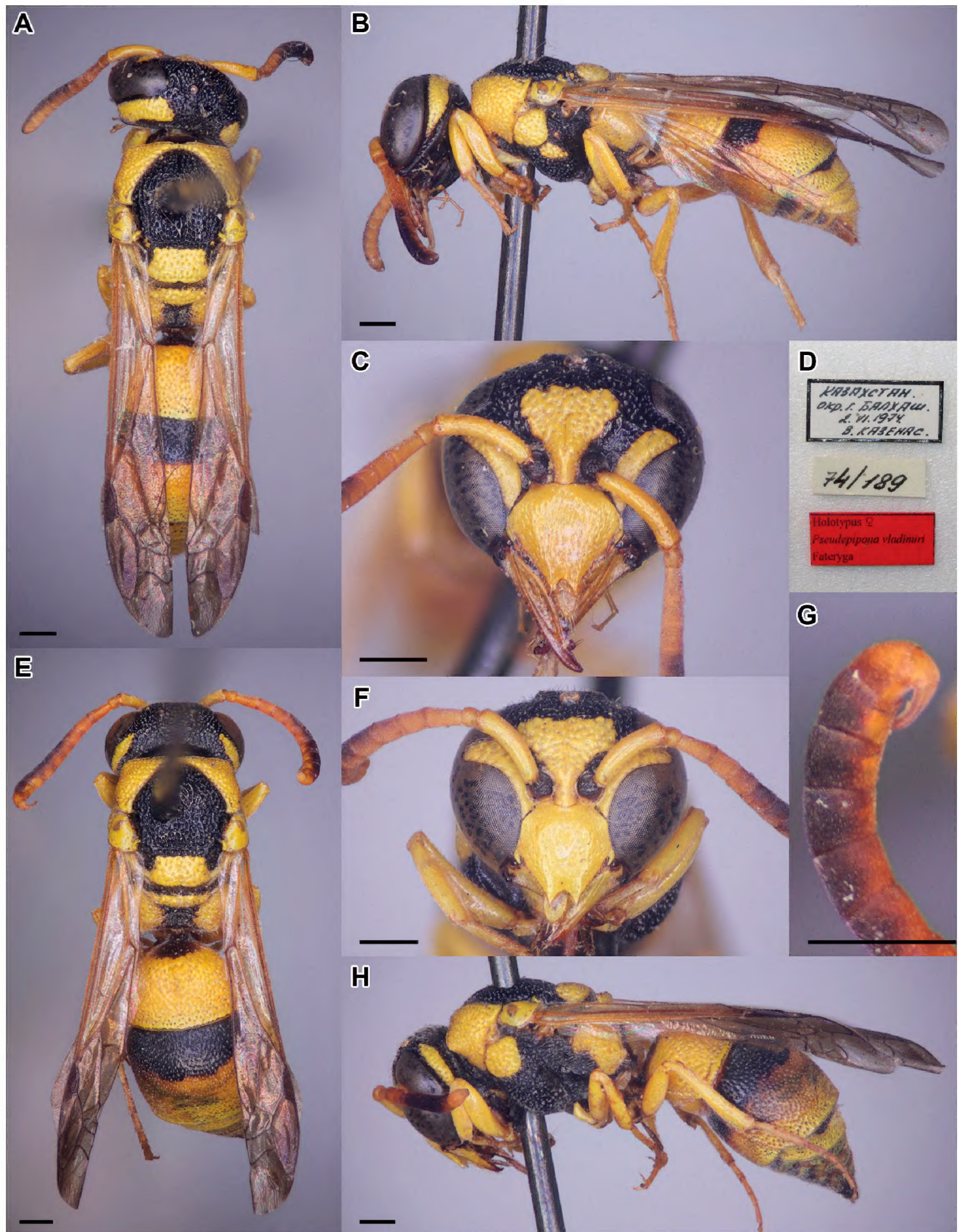


Figure 9. *Pseudepipona vladimiri* Fateryga, sp. nov. **A–D** ♀, holotype **E–H** ♂, paratype **A, E** habitus in dorsal view **B, H** habitus in lateral view **C, F** head in frontal view **D** labels **G** apex of antenna. Scale bars: 0.5 mm.

curved, and long, narrowing towards apex, reaching middle of F8. Cuspis without the dorsal process typical of some species in the nominotypical subgenus (see Fateryga 2022). Aedeagus as in Fig. 3E, J, median expansion broad, ventral lobe in lateral view trapezoidal and comparatively small.

Sculpture similar to that in female but punctures on clypeus not forming longitudinal rows. T6 and S6 punctate similarly to previous segments. T7 and S7+8 mostly with microsculpture only.

Setae as in female.

Coloration mostly as in female but mandible and labrum yellow. Spot on ventral mesepisternum reduced. Entire F10 and F11 ferruginous but F3 darkened dorsally. T7 mostly yellow; S7+8 black.

Etymology. The new species is named after the Soviet and Kazakh entomologist Vladimir L. Kazenas, the collector of the type series.

Distribution. Kazakhstan (Karaganda Province).

Remarks on two extralimital species

Pseudepipona priesneri Gusenleitner, 1970

Pseudepipona priesneri Gusenleitner in Blüthgen and Gusenleitner 1970: 5, 10–11, ♀ ♂; type locality: “Jarrahi Ufergebiet, 18 km nordöstl. Shadegan, Khuzistan” [Iran].

Distribution. Saudi Arabia, Iran (Blüthgen and Gusenleitner 1970).

Remarks. This species was described without indication of the subgenus and thus was then placed in the nominotypical one by default. However, *P. priesneri* fits the diagnosis of the subgenus *Deuterepipona*. Particularly, the male mandible is without a notch between the basal and preapical teeth (Blüthgen and Gusenleitner 1970). Photos of a female and a male paratypes of this species from Iran (Stuttgart State Museum of Natural History, Stuttgart, Germany) were examined to confirm this. It is also of note that *P. priesneri* is very closely related (or may be even conspecific) to *P. herzi*; the differences between them are only in the coloration. Therefore, a further study of the specimens (not photos) is necessary to confirm the taxonomic independence of *P. priesneri*.

Pseudepipona pseudominuta Gusenleitner, 1971

Pseudepipona pseudominuta Gusenleitner in Bytinski-Salz and Gusenleitner 1971: 295, ♀; type locality: “Israel, Jericho”.

Distribution. Turkey, Israel (Gusenleitner 2013).

Remarks. *Pseudepipona pseudominuta* was also described without indication of the subgenus and thus was then placed in the nominotypical one by default. However, this species is “very similar to *P. niveopicta*” (Bytinski-Salz and Gusenleitner 1971) and the latter taxon has been already transferred to the subgenus *Deuterepipona* by Fateryga et al. (2017). A female and a male of *P. pseudominuta* from Turkey (FSCV) were examined to confirm that it fits the diagnosis of the subgenus *Deuterepipona*. Particularly, the male mandible is without a notch between the basal and preapical teeth.

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